

# Course Material

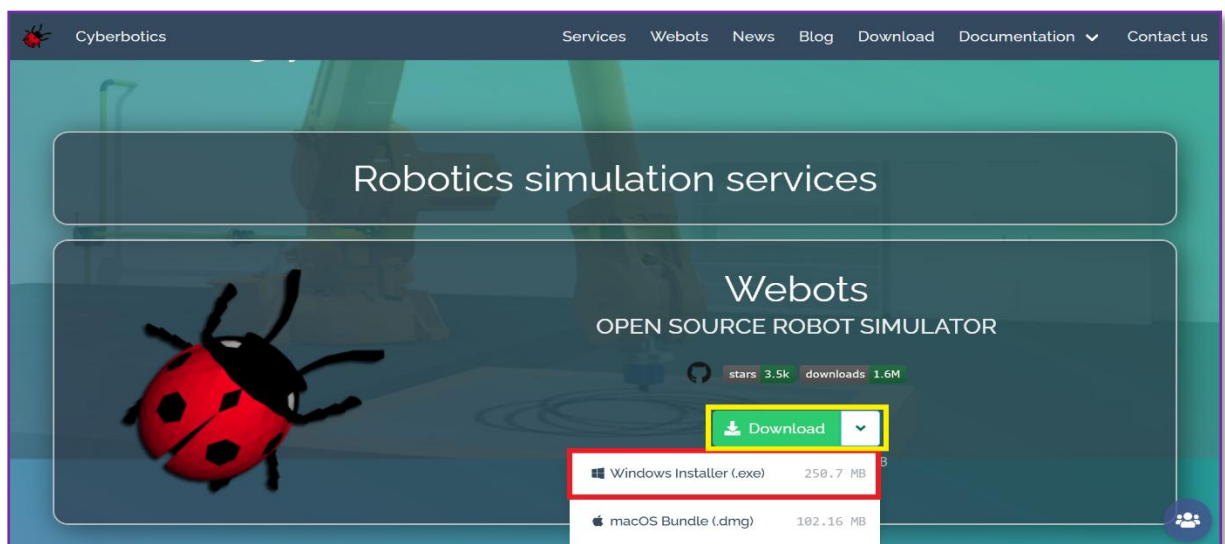
## Webots

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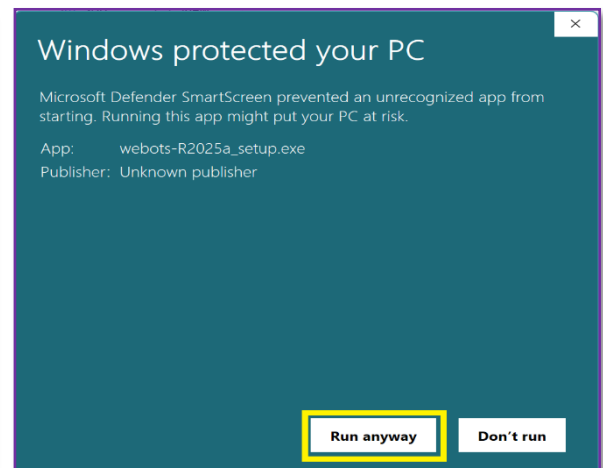
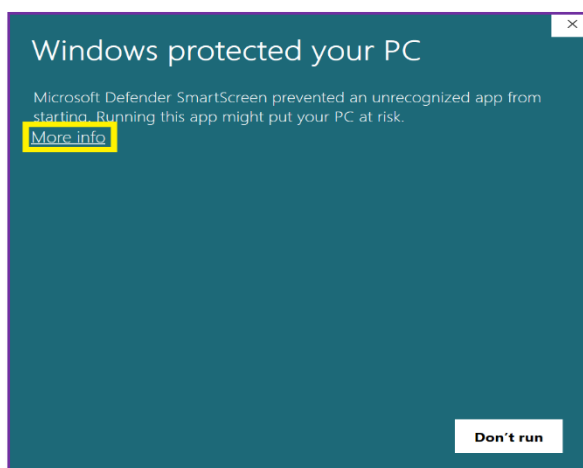
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### Installation

1. Go to <https://cyberbotics.com/>
2. Click on "**Download**" → Select "**Windows Installer (.exe)**".



3. There will be a "**warning pop-up**" during installation. Click on "**More info**" and select "**Run anyway**" to proceed with the installation.

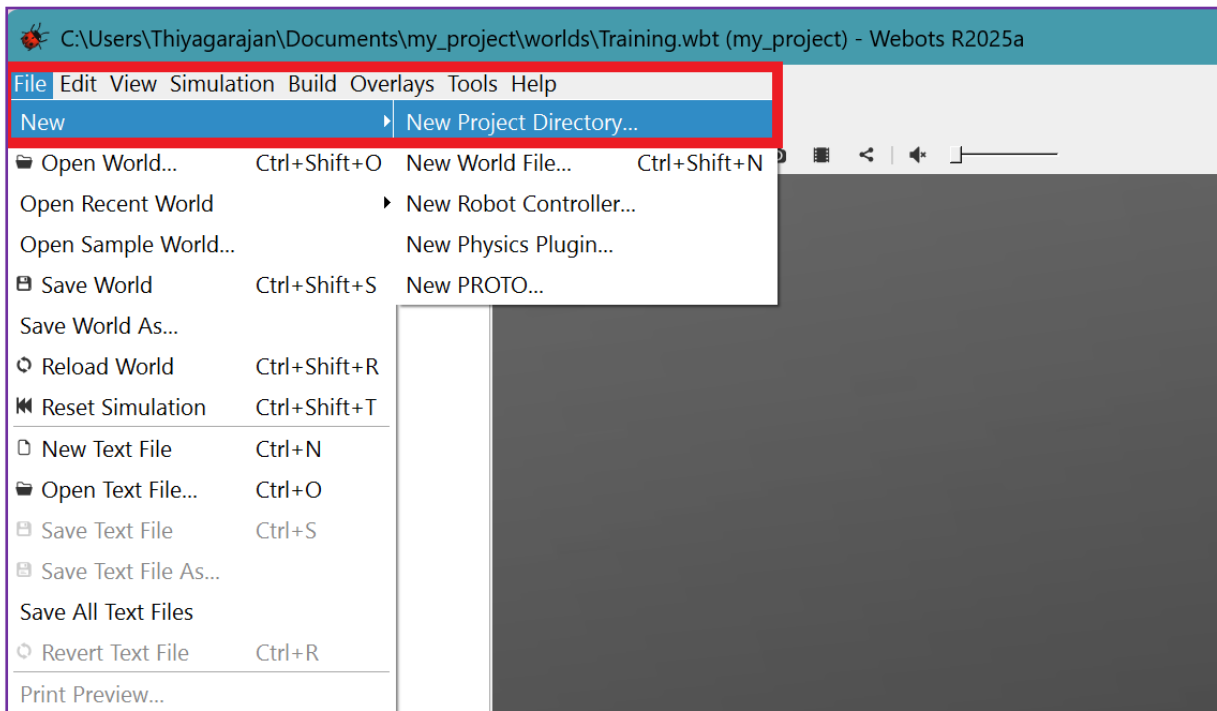


## Basic Navigation Controls

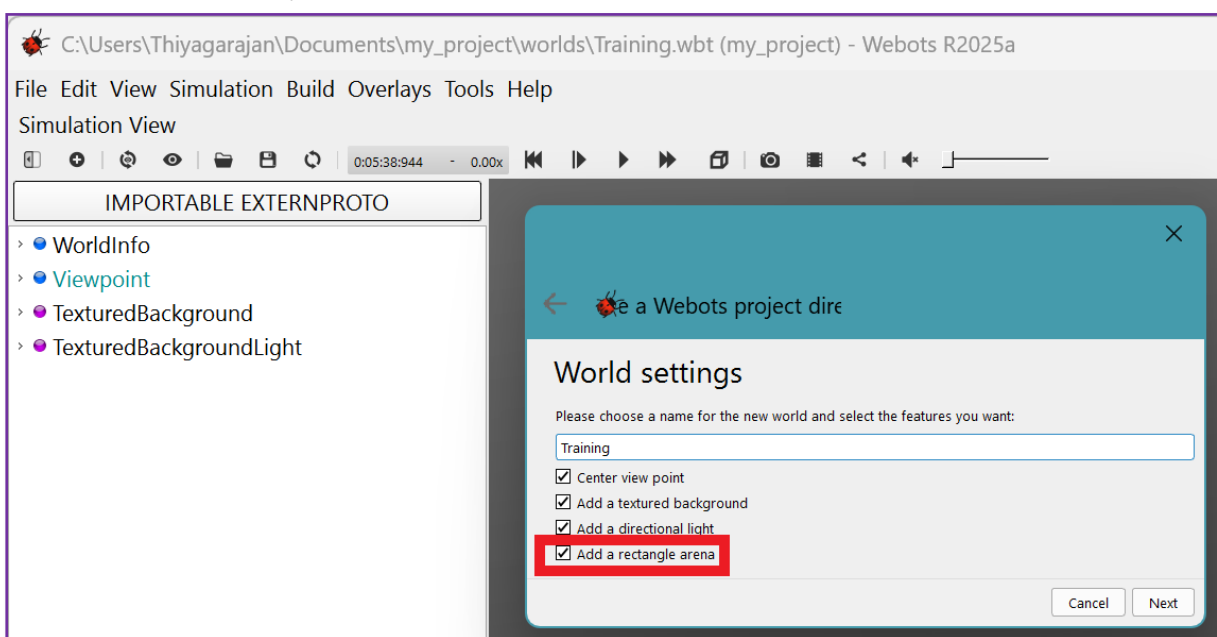
- **Zoom** → Use the **mouse scroll** to zoom in and out.
- **Free Rotate** → Hold **left mouse button** to freely rotate the view.
- **Pan** → Hold **right mouse click** to pan across the workspace.

## Webots – Add a new object

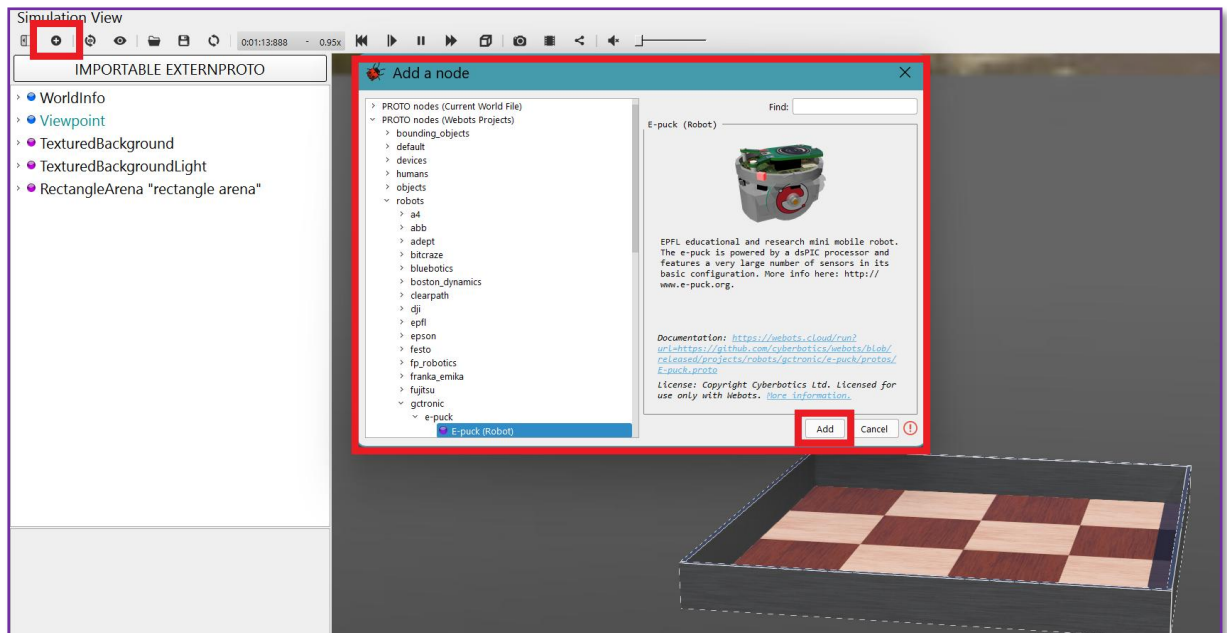
1. Once the application is launched, click on **"File → New → New Project Directory"**.



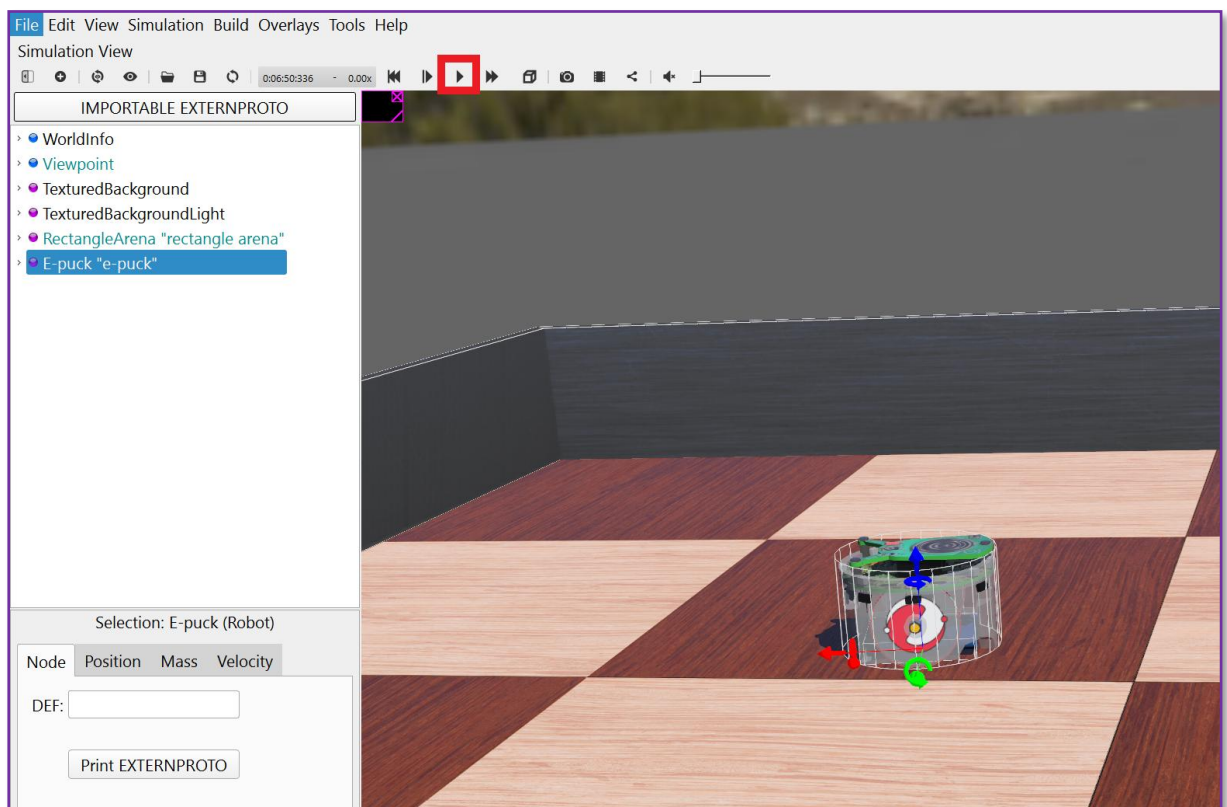
2. While creating the directory, enable **"Add a rectangle arena"** for a rectangle-defined boundary.



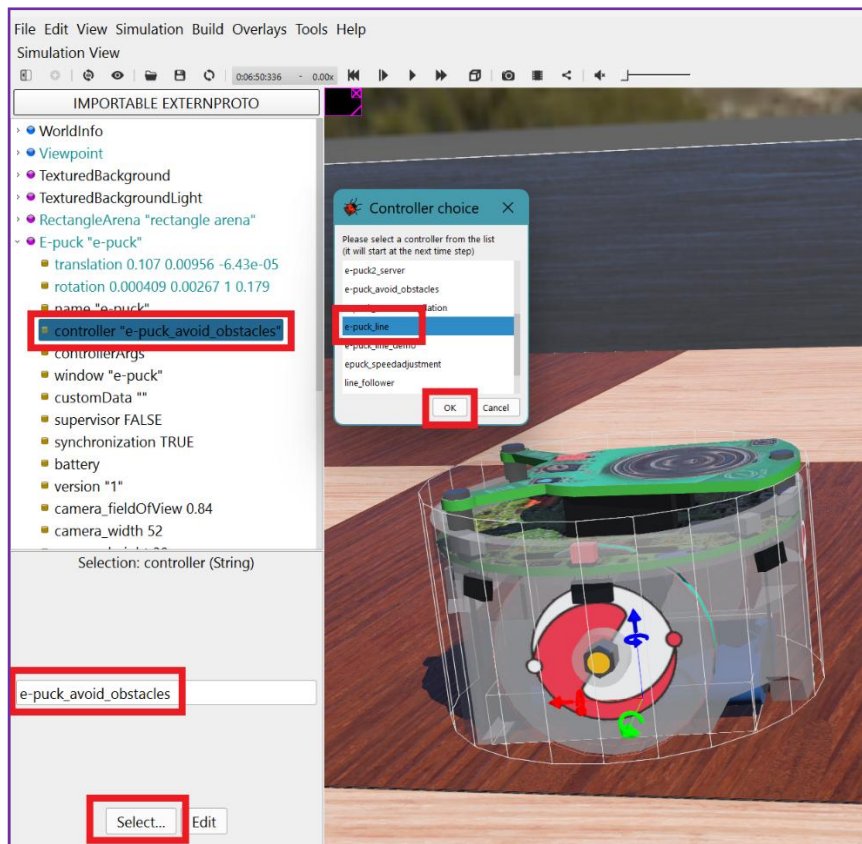
- Click on "Add a new object" and select "PROTO nodes (Webots Projects) → robots → gctronic → e-puck → E-puck (Robot)". Click on "Add" to add the robot to your workspace.



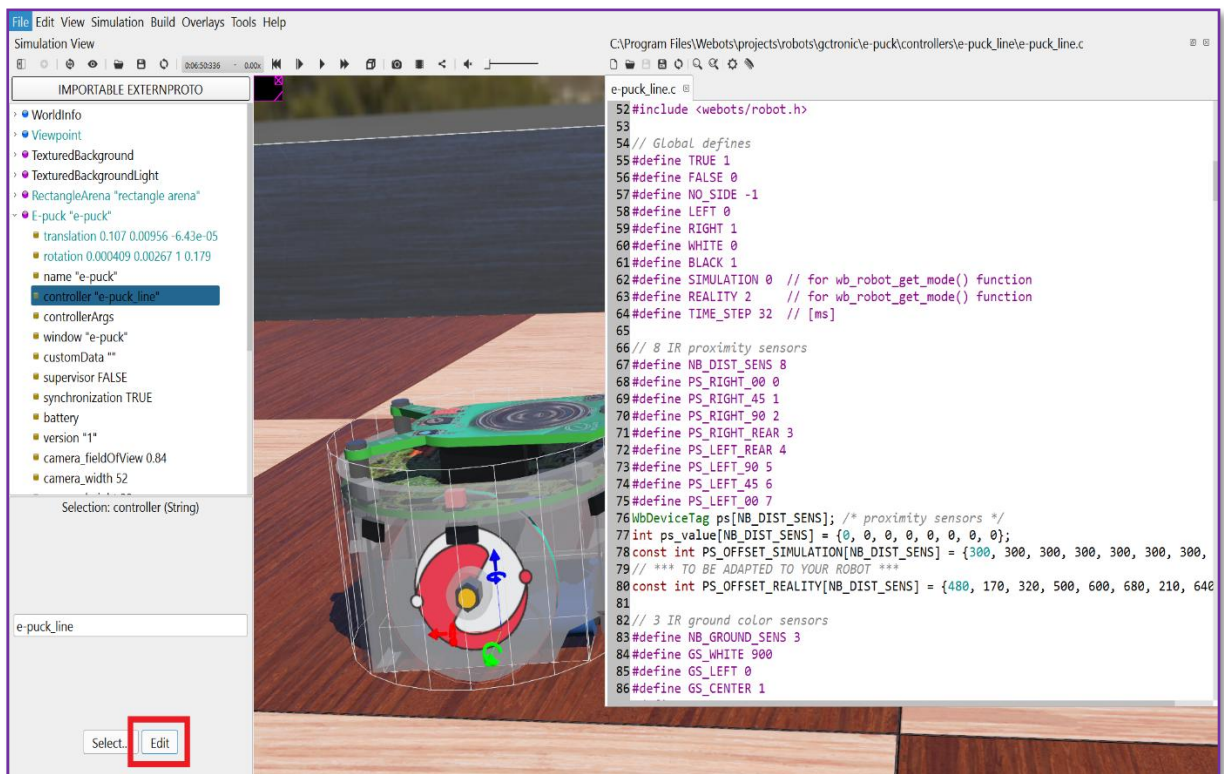
- The robot chosen will be added to your workspace. We can play the programmed controller simulation of this robot by clicking on the "Play" button at the top.



5. Different types of **controllers** are available to choose from for **simulation**. Click on "**Select**" to change the **controller type**. Click on "**OK**" to simulate the new controller.



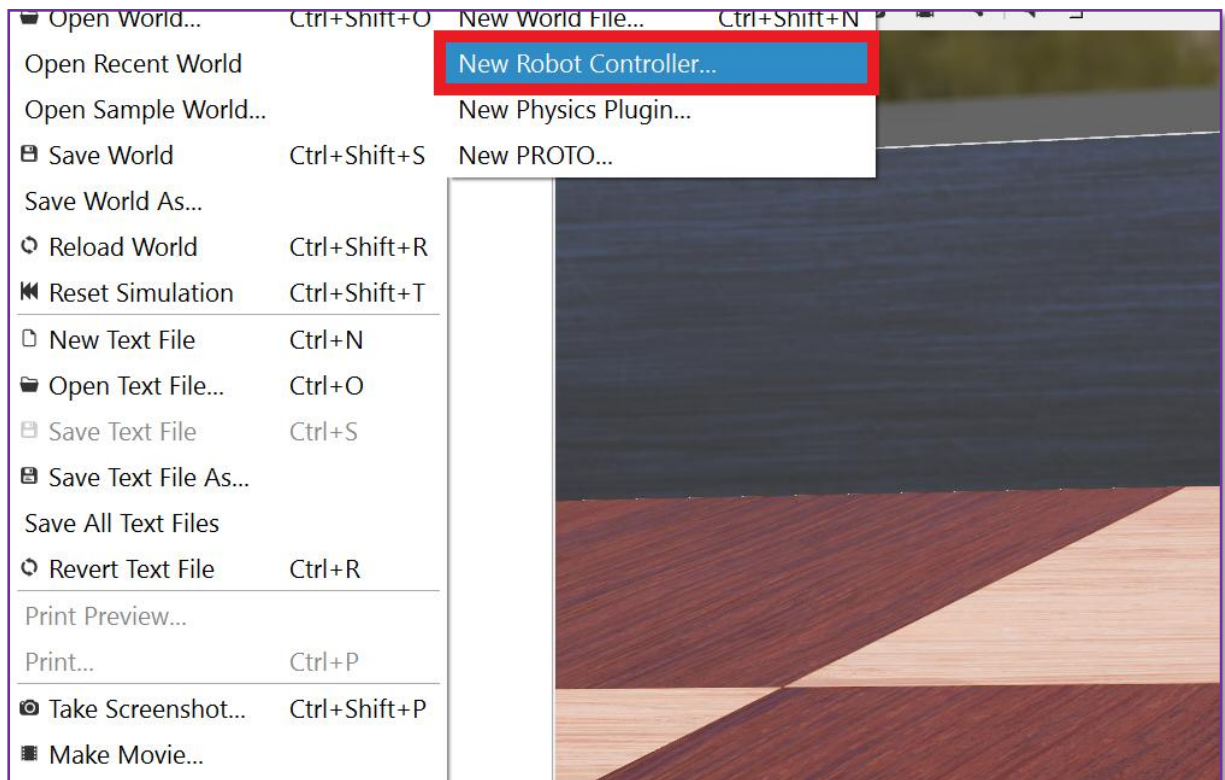
6. Click on "**Edit**" instead to view the **Webots Code** text editor in **C language**.



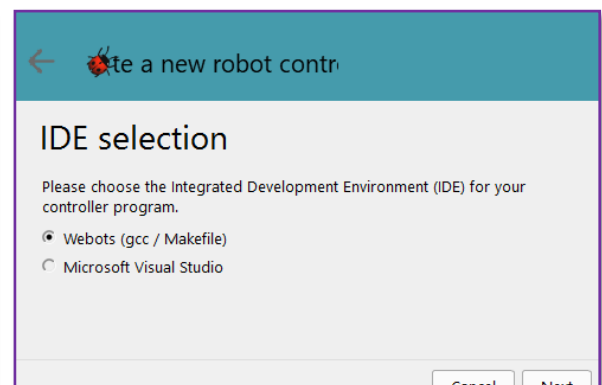
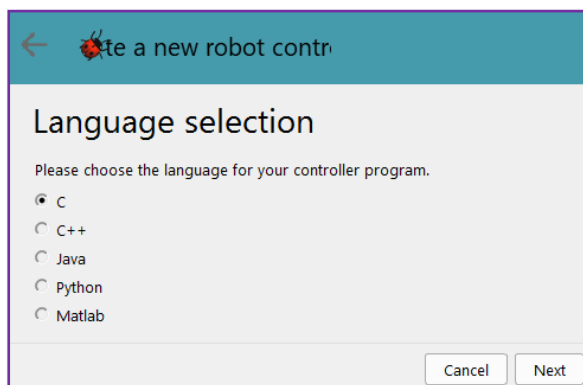


## Webots – New Robot Controller

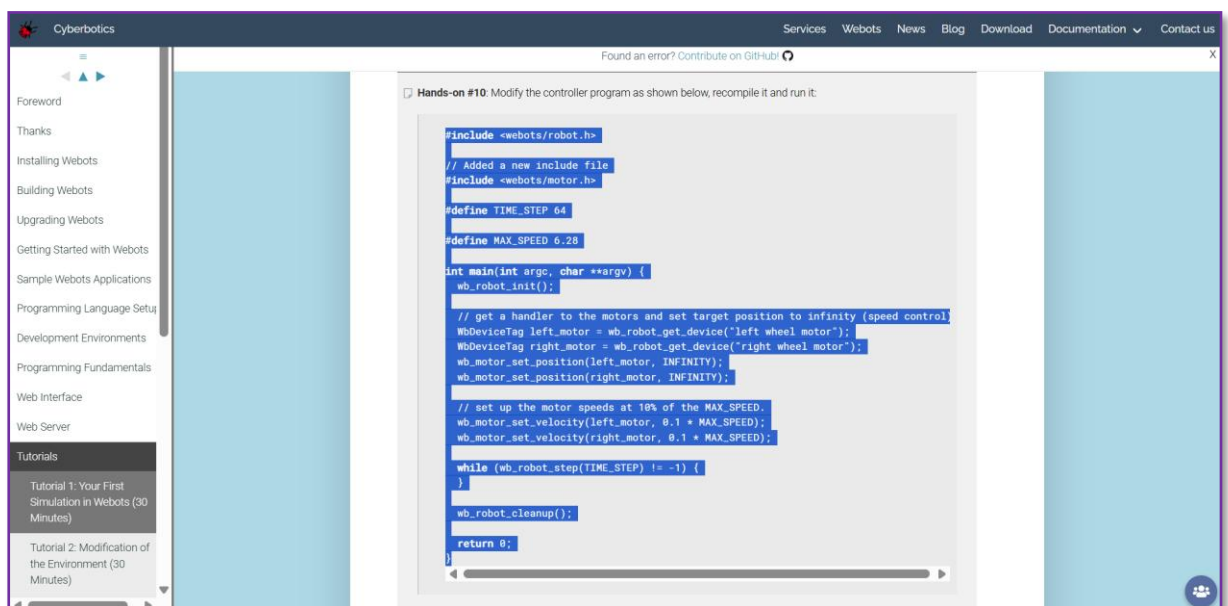
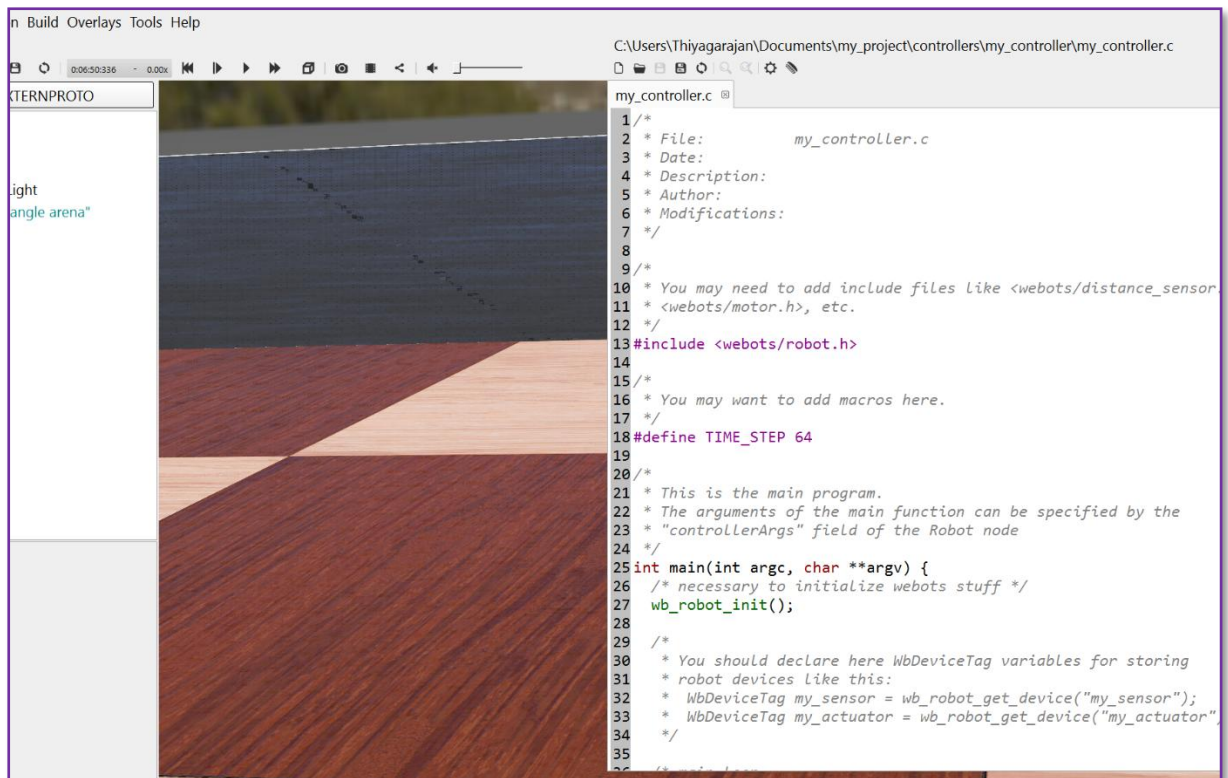
1. Click on **"File → New → New Robot Controller"**.

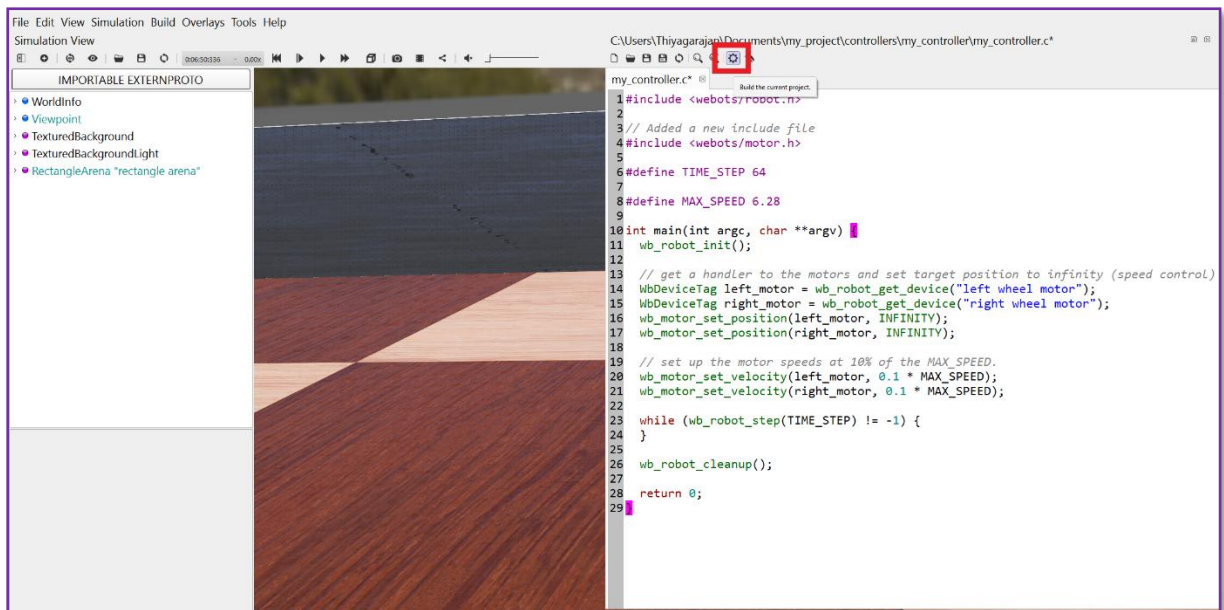


2. Choose the following options: **"Programming language for controller"**, **"IDE selection (default)"**, and provide a name for your controller. Click on **"Finish"** once done.

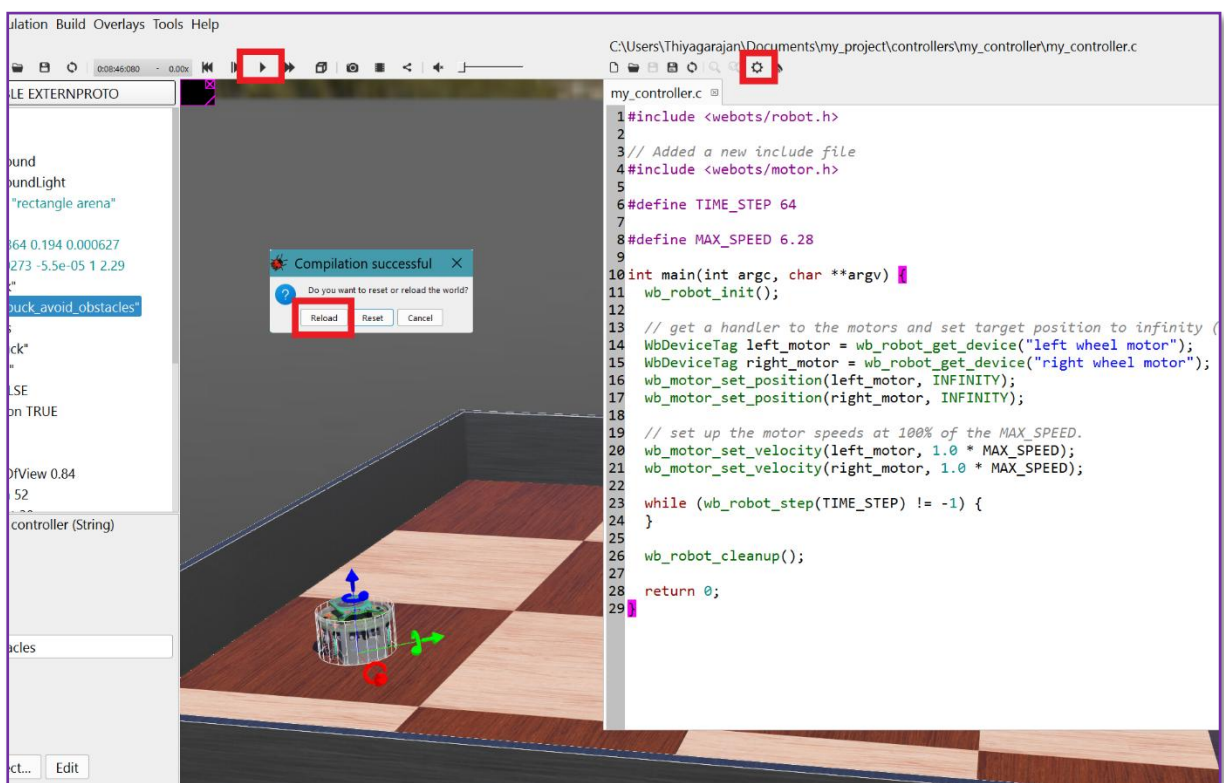


3. Text Editor in C program will be opened in Webots workspace. Go to [Cyberbotics Tutorial](#) and scroll down to **"Hands-on #10"**. Copy the C code and paste it into the Webots text editor. Click on **"Build the current project"** to build the controller.



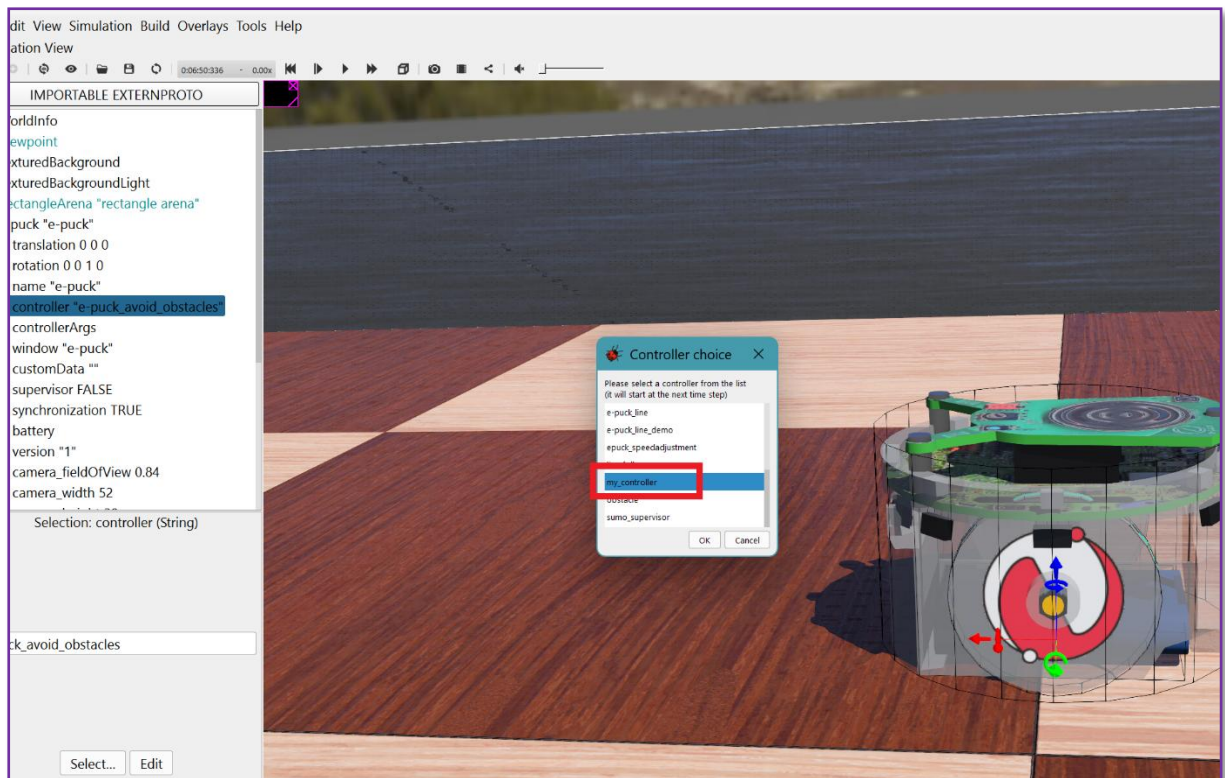


4. Click on **"Build the current project"** and **"Reload"** the world for the controller. Play the simulation to see the robot moving at a higher speed.

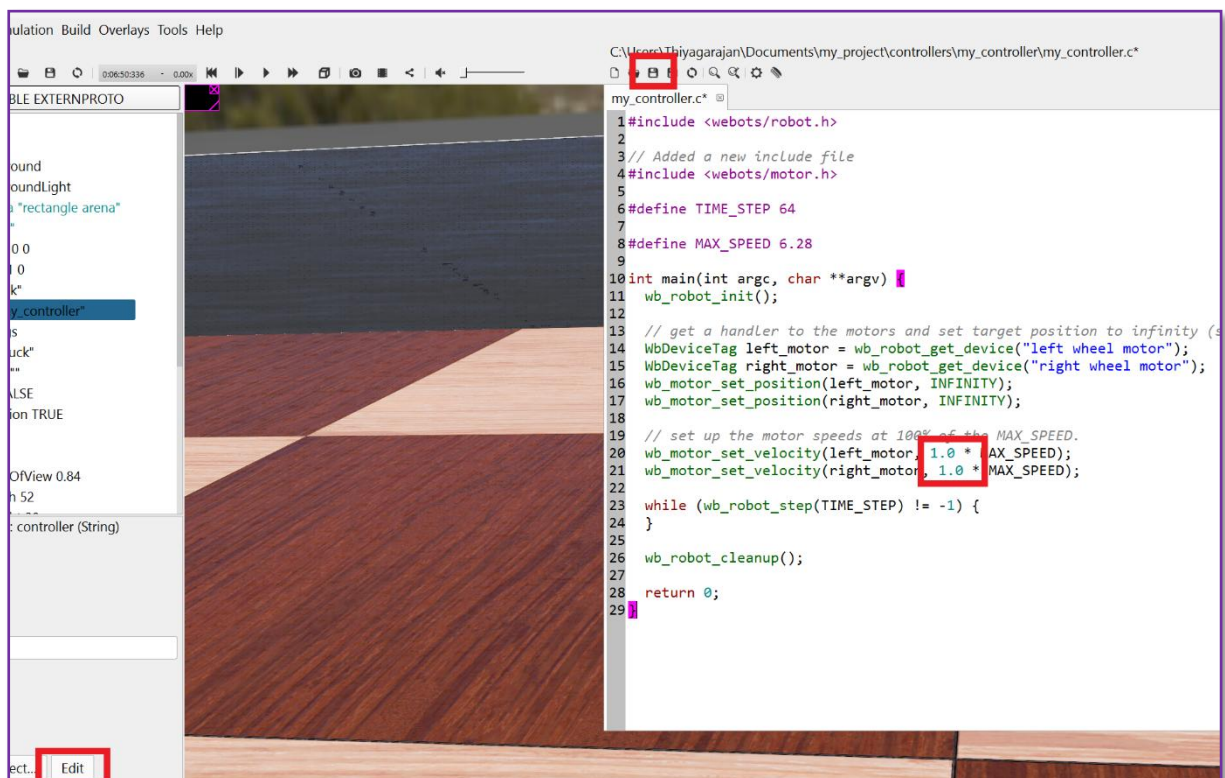


5. Now add the robot under **"PROTO nodes (Webots Projects) → robots → gctronic → e-puck → E-puck (Robot)"**. Click on **"Add"** to add the robot to your workspace.
6. Change the controller of the robot to the new one created.





7. Click on **"Edit"** to change the velocity of motors to **1.0** (i.e., 100% at full velocity) and save the code.



8. Click on **"Build the current project"** and **"Reload"** the world for the controller. Play the simulation to see the robot moving at a higher speed.



